What is claimed is:

1. An apparatus comprising:

a support structure having first and second arm portions formed thereon for movement relative to one another, and a secondary portion integrally formed on an outer end of each arm portion for movement therewith; and

a primary actuator operably associated with the support structure for driving the arm portions relative to one another in response to an electrical activation of the primary actuator, and a secondary actuator operably associated with each secondary portion for driving each secondary portion between an opened position and a closed position in response to an electrical activation of the secondary actuator, each of the actuators being operable independently of one another.

2. The apparatus of claim 1 further comprising:

a rigid non-flexing web portion associated with the support structure.

3. The apparatus of claim 1 further comprising:

a force transfer member portion for transmitting a force from the primary actuator to move the associated secondary portions between an extended position and a retracted position with respect to one another, the secondary portions moving toward one another to the retracted position when the primary actuator is de-energized and the secondary portions moving away from one another to the extended position when the primary actuator is energized.

4. The apparatus of claim 3 further comprising:

a rigid non-flexing web portion associated with outwardly extending side portions at opposite ends of the web portion defining a rigid non-flexing C-shaped portion of the support structure; and

a pair of hinge portions extending generally parallel to one another between the force transfer member portion and each arm portion of the support structure, and between the force transfer member portion and each side portion of the support structure.

5. The apparatus of claim 1, wherein each of the secondary portions further comprises:

a secondary web portion integrally associated with the corresponding arm portion of the support structure; and

first and second secondary arm portions integrally associated with and extending from opposite ends of each secondary web portion.

6. The apparatus of claim 5, wherein each of the secondary portions further comprises:

a force transfer member portion for transmitting a force from the secondary actuator to move the associated secondary arm portions between an opened position and a closed position with respect to one another, the secondary arm portions moving toward one another to the closed position when the secondary actuator is de-energized and the secondary arm portions moving away from one another to the opened position when the secondary actuator is energized.

7. The apparatus of claim 1, wherein each of the secondary portions further comprises a clamp portion.

8. The apparatus of claim 7, wherein each of the secondary portions further comprises opposing surfaces formed on each of the clamp portions with shaped recesses engagable with a movable member having a complementary shape.

9. The apparatus of claim 1, wherein each of the secondary portions further comprises a valve portion.

10. The apparatus of claim 9 further comprising:

the secondary portions defining a first valve portion and a second valve portion; and

pump means for pumping a fluid, the pump means positioned between the first and second arm portions of the support structure and in fluid communication with the first valve portion and the second valve portion.

11. The apparatus of claim 1, wherein the primary and secondary actuators can be triggered in different sequential series for bi-directional operation.

12. The apparatus of claim 11, wherein the bi-directional operation is operable to move a movable member in either direction with respect to the support structure.

13. The apparatus of claim 11, wherein the bi-directional operation is operable to pump fluid in either direction with respect to the support structure.

14. The apparatus of claim 1, wherein the actuators are piezoelectric.

15. The apparatus of claim 1, wherein the actuators are magnetostrictive.

16. The apparatus of claim 1 further comprising:

a first and second pair of substantially parallel hinges for the first and second clamps to pivot about respectively formed by at least one reduced area created by slots located in the support structure between each clamp and each side of the structure, and between the force transfer member and the clamps.

17. The apparatus of claim 1, wherein the support structure is formed of homogenous material.

18. The apparatus of claim 1, wherein the support structure is a uni-body construction.

19. The apparatus of claim 1 further comprising:

means for preloading at least one of the primary and secondary actuators.

20. The apparatus of claim 19, wherein the preloading means further comprises:

a force focusing member operably associated with an end of the at least one of the primary and secondary actuators; and

a screw threadably engagable with a rigid end web of the support structure, the screw operably associated with the force focusing member such that a preload force can be applied to the actuator through the screw and force focusing member prior to energizing the actuator.

21. A method comprising the steps of:

energizing a primary actuator for moving first and second primary pivotable arm portions of a support structure from a first position adjacent to one another to a second position spaced apart from one another;

energizing at least one secondary actuator for moving first and second secondary pivotable arm portions of the support structure from a first position adjacent one another to a second position spaced apart from one another; and

sequentially energizing and de-energizing the primary and secondary actuators to perform work.

22. The method of claim 21 further comprising the steps of:

opening a fixed clamp responsive to energization of a first secondary actuator, while a normally closed movable clamp remains closed at a start position on a movable member in response to a de-energized second secondary actuator;

moving the movable clamp away from fixed clamp responsive to energization of the primary actuator to carry the movable member to be moved with respect to the fixed clamp;

closing the fixed clamp in response to de-energization of the first secondary actuator;

opening the movable clamp in response to energization of the second secondary actuator; and

moving the movable clamp toward the fixed clamp in response to de-energization of the primary actuator to the start position prior to closing on the movable member.

23. The method of claim 21 further comprising the steps of:

opening a first valve responsive to energization of a first secondary actuator, while a normally closed second valve remains closed in response to a de-energized second secondary actuator;

actuating a pump means responsive to energization of the primary actuator to draw fluid through the first valve into the chamber;

closing the first valve in response to de-energization of the first secondary actuator;

opening the second valve in response to energization of the second secondary actuator; and

actuating the pump means in response to de-energization of the primary actuator to force fluid through the second valve.